RECORD OF DECISION

SAN FERNANDO VALLEY SUPERFUND SITE,
VERDUGO STUDY AREA
LOS ANGELES, CALIFORNIA

U.S. Environmental Protection Agency
Region 9
San Francisco, California

February 2004

SAN FERNANDO VALLEY SUPERFUND SITE, VERDUGO STUDY AREA
VERDUGO BASIN
RECORD OF DECISION

Table of Contents

I. DECLARATION

SITE NAME AND LOCATION

San Fernando Valley, Verdugo Study Area
Los Angeles, California

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected final remedial action for the San Fernando Valley Site, Verdugo Study Area in Los Angeles, California, which was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the administrative record for this site.

The State of California concurs with the selected remedy.

DESCRIPTION OF THE SELECTED REMEDY: NO ACTION

The selected remedy is no remedial action. The results from groundwater monitoring conducted through December 2002 indicate that the low levels of contamination at the site do not pose a significant risk to either public health or the environment.

STATUTORY DETERMINATION

No CERCLA Section 121 statutory determinations are necessary since there is no significant risk and there is no remedial action being selected. The United States Environmental Protection Agency (U.S. EPA), as lead agency, has determined that no remedial action is necessary to ensure protection of human health and the environment.

AUTHORIZING SIGNATURE:

Elizabeth J. Adams
Chief, Site Cleanup Branch, Superfund Division
U.S. Environmental Protection Agency, Region IX

FEBRUARY 24, 2004
Date

II. DECISION SUMMARY

1.0 SITE NAME, LOCATION, AND DESCRIPTION

The Verdugo Study Area covers an area of approximately 2,000 acres of the 4,400 acre Verdugo Basin, which is situated in the eastern portion of the San Fernando Valley Basin (SFVB). The Verdugo Basin is bounded on the northeast by the San Gabriel Mountains, on the west by the Verdugo Mountains, and on the southeast by the San Rafael Hills (Figure 1-1). The Verdugo Study Area is generally considered a small tributary of the larger SFVB ground water basin. Land use in the Verdugo Study Area is primarily residential along the floor of the valley, and undeveloped open space in surrounding mountains. A northwest-oriented strip of commercial development is present along Foothill Boulevard, and a commercial sector is present in the southern portion of the basin. The Verdugo Study Area is not an industrial area and does not contain a point source that is a primary source of groundwater contamination. Rather, it is an area of historical and current residential, commercial, and limited agricultural use with contamination likely due to non-point sources.

The lead agency for the Verdugo Study Area is the U. S. Environmental Protection Agency (U.S. EPA). The U.S. EPA worked with the CalEPA Department of Toxic Substances Control (DTSC), the Los Angeles Regional Water Control Board (RWQCB) and the CalEPA Department of Health Services during the Remedial Investigation (RI) for the Verdugo Study Area. These agencies have been consulted about this determination and agree with U.S. EPA's proposed plan.

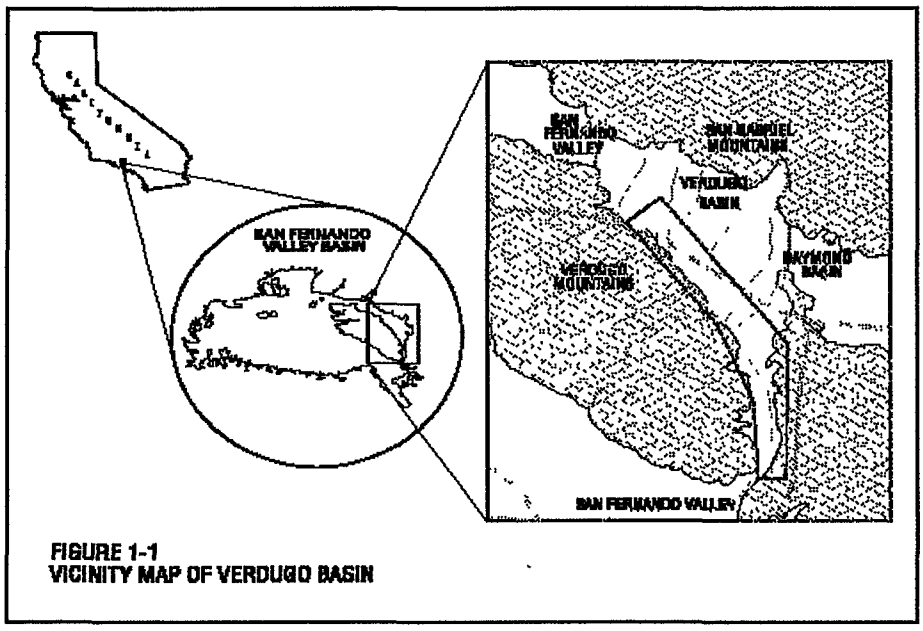

FIGURE 1-1
VICINITY MAP OF VERDUGO BASIN

2.0 SITE HISTORY AND ENFORCEMENT ACTIVITY

In 1981, the Los Angeles Department of Water and Power (LADWP) began a 2-year study designed to assess groundwater contamination in the SFVB, including wells located in the Glorietta, Glenwood, and Mills Well Fields in the Verdugo Basin. More than 600 water supply wells were sampled as part of this program. Additional work included a review of existing hydrogeologic data and industrial site surveys. Results of this work are presented in the *Groundwater Quality Management Plan for the San Fernando Valley Basin*, and indicated that 45 percent of LADWP supply wells in the eastern SFVB contained trichloroethene (TCE) in excess of maximum contaminant levels (MCLs) and/or perchloroethene (PCE) in excess of 1983 state action levels (LADWP, 1983).

Pursuant to California Assembly Bill 1803 (AB 1803), wells within the SFVB were sampled in 1983 for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and pesticides/herbicides. The current U.S. EPA and California Department of Health Services (DHS) MCL for both TCE and PCE is 5.0 ppb. Results of the 1983 sampling revealed concentrations of VOCs above MCLs in several SFVB well fields. TCE and PCE were the two most common VOCs detected. PCE was the main contaminant detected in the Verdugo Study Area, and was detected in excess of its MCL (52 parts per billion (ppb) during 1982) in several water supply production wells in this basin.

In 1986, at the request of the State of California, U.S. EPA placed four areas within the

SFVB on the National Priorities List (NPL) as individual Superfund sites, due to the presence of VOCs (TCE and PCE) in groundwater that had been detected in concentrations that exceeded state and federal drinking water standards. The four areas are: North Hollywood (Area 1) containing the North Hollywood Operable Unit (OU) and the Burbank OU; Crystal Springs (Area 2) containing the Glendale North and South OUs; Verdugo (Area 3); and Pollock (Area 4). The Verdugo Basin is generally considered a small tributary of the larger SFV groundwater basin.

U.S. EPA subsequently entered into a cooperative agreement with the LADWP to conduct a Remedial Investigation (RI) of the SFVB. The RI included a baseline risk assessment for the eastern portion of the SFVB.

In 1989, LADWP completed a soil gas sampling and analysis program within the SFVB designed to better define limits of shallow groundwater contamination. In the Verdugo Study Area, 73 soil gas samples were obtained and analyzed. Based upon results of soil gas sampling and available data from existing wells, seven vertical profile borings (VPBs) in the Verdugo Study Area were converted into shallow monitoring wells in 1990.

A baseline risk assessment was conducted in conjunction with the San Fernando Valley RI in 1991. This baseline risk assessment was completed on a regional scale, addressing compounds that exceeded MCLs in the groundwater of the entire eastern portion of the SFVB, which includes the Verdugo Study Area. The primary contributors to risks (most notably 1,1-DCE, carbon tetrachloride, 1,2-DCA, and TCE) were evaluated based on a reasonable maximum exposure (RME) calculated from observed VOC concentrations. These RMEs were calculated based on regional data rather from a specific areas within the SFVB. In the Verdugo Study Area, the levels of contaminants observed were significantly lower than the concentration levels used to calculate risk for the entire SFVB; no VOCs were observed at concentrations exceeding their respective MCLs.

U.S. EPA completed a hydrogeologic site assessment of the Verdugo Study Area in 1993 (*Site Assessment and Monitoring Plan for the Verdugo Basin, Los Angeles County, California*, April 17, 1993). This document assisted in evaluating the nature and extent of groundwater contamination in the basin and provided recommendations for ongoing monitoring of groundwater contamination. A further evaluation of the geological setting, groundwater recharge, discharge and flow conditions, and a summary of water quality was presented in the *Final Summary of Groundwater Quality, San Fernando Valley Superfund Site, Area 3 (Verdugo Basin), Los Angeles, California, May*, 2003).

Since the completion of the RI in 1992 through 2002, U.S. EPA has continued to monitor groundwater quality by sampling groundwater in wells in the Verdugo Study Area four times a year as part of the SFVB basinwide monitoring program. Data from these sampling events, as well as ground water from local water-supply wells, are used to map

the presence and extent of ground water contaminants, and are available as a part of the Administrative Record.

3.0 COMMUNITY PARTICIPATION

The Proposed Plan summarizes the more detailed information found in the *Final Summary of Groundwater Quality, San Fernando Valley Superfund Site Area 3 (Verdugo Basin), Los Angeles, California*, dated May 20, 2003, and other documents in the Administrative Record. The Proposed Plan was distributed using U.S. EPA's mailing list for this site. EPA published notice of the Proposed Plan in the Los Angeles Daily News and San Fernando Sun on November 6, 2003, and in Asbarez (a local newspaper) on November 14, 2003. A public comment period on the Proposed Plan was held from November 6, 2003 to December 5, 2003. A formal public meeting was held on November 18, 2003 at the Verdugo Woodlands Elementary School. No public comments were made at the public meeting or subsequently submitted to EPA.

The Proposed Plan and other documents are available for review at the site's information repositories.

4.0 SCOPE AND ROLE OF OPERABLE UNIT OR RESPONSE ACTION

Groundwater contamination in the Verdugo Study Area has been characterized by data obtained from historical sampling of production wells since the early 1980's and by recent sampling of groundwater wells through 2002. Recent data indicates that concentrations of VOCs have declined. Current PCE contaminant levels in the Verdugo Study Area are below the MCL. TCE has never been detected in concentrations above the MCL in the Verdugo Study Area. Inorganic analyses over the years have occasionally found concentration levels of dissolved metals which exceeded Federal and State standards; however, when the quality assurance/quality control (QA/QC) methods of the laboratory were reviewed, it was determined that the samples were actually non-detect. Believed to be due to historic fertilizer application in agricultural practices, nitrate has been detected consistently above the MCL in roughly half of the wells tested since the early 1990's; however, all groundwater extracted from the Verdugo Study Area and used for drinking water is treated/blended by the purveyors. As a part of the monitoring process, operators take six (6) daily samples at internal process points. Weekly samples from the distribution system as well as monthly samples from all district groundwater wells are also analyzed. These levels are supplied in monthly reports to DHS to verify that levels of nitrate are in the 22-28 ppm range, well below the 45 ppm State standard for drinking water.

Therefore, based on the lack of significant VOC and inorganic contamination in the basin, and the existing blending and treatment for nitrate, U.S. EPA has determined that conditions do not warrant remedial action under Superfund. No action under Superfund

is necessary in the Verdugo Study Area to ensure adequate protection of human health and the environment.

5.0 SITE CHARACTERISTICS

5.1 Conceptual Site Model

The conceptual site model (CSM) is based on the predicted relationships between potential receptors and the chemicals of potential concern (COPCs). In the Verdugo Study Area, the COPCs are nitrate and PCE.

Based on information pertaining to water use in the Verdugo Study Area (see Section 5.2.2.1), the potential receptors for the screening-level human health risk assessment (HHRA) are residents who use groundwater from the Verdugo Basin for domestic purposes. The potential exposure routes for these residents are ingestion, inhalation of vapors, and dermal contact with groundwater. Although there may be other uses of the groundwater (e.g., drinking water source for commercial/industrial area), the residential receptors are expected to have the greatest potential exposure. Potential risks to human health associated with exposure to chemicals of potential concern in groundwater were found to be 5×10^{-5}, which is within EPA's acceptable risk management range (1×10^{-6} to 1×10^{-4}).

For the ecological risk assessment (ERA), the ecological receptors are potentially exposed via root and/or foliar uptake, dermal contact, inhalation, direct ingestion, and ingestion of prey items. At 20 to 300 feet bgs, contaminated groundwater at the Verdugo Study Area is far below the root zone of plants and animal burrowing depths. Despite the potential for exposure to the COPCs in soil gas at depths of 6 to 7 feet, there is no significant ecological habitat and thus there are no potential wildlife receptors within the study area. Therefore, no complete exposure pathways were identified and the overall conclusion of the ERA is that there is no ecological risk at the Verdugo Study Area.

5.2 Overview of Verdugo Study Area

The Verdugo Study Area covers an area of approximately 2,000 acres of the 4,400 acre Verdugo Basin, which is situated in the eastern portion of the San Fernando Valley (see map from Proposed Plan). The Verdugo Basin is bounded on the northeast by the San Gabriel Mountains, on the west by the Verdugo Mountains, and on the southeast by the San Rafael Hills. All surface water channels feed into the Verdugo Wash, which is located along the west side of the basin. Land use in the Verdugo Study Area is primarily residential along the floor of the valley, and undeveloped open space in surrounding mountains. A northwest-oriented strip of commercial development is present along Foothill Boulevard, and a commercial sector is present in the southern portion of the basin. The basin contains four scattered agricultural areas, and no industrial development.

The right to use groundwater in the Verdugo Study Area is strictly controlled by a 1979 adjudicated judicial agreement (Judgment) concerning water rights in the SFVB. Under the Judgment, only the City of Glendale and the Crescenta Valley Water District (CVWD), formerly the Crescenta Valley County Water District (CVCWD), can use surface and groundwater in the Verdugo Study Area. Groundwater within the Verdugo Study Area is used as a source of potable water supply by the City of Glendale and the CVWD.

5.2.1 Geology

The Verdugo Basin is considered a down-dropped block between the uplifted San Gabriel Mountains to the north and the Verdugo Mountains to the south. Uplift along the north is greater than that to the south, leading to relatively coarse alluvial fan deposits derived from the surrounding crystalline San Gabriel mountains. Faults in the Verdugo basin generally strike northwest, are down-dropped to the southeast, and dip moderately to steeply to the northeast. The Tujunga Fault, located along the base of the San Gabriel Mountains, generally defines the northeastern edge of the Verdugo Basin.

5.2.2 Hydrogeology

Groundwater flows into the Verdugo Basin from precipitation, stream beds and irrigation. There are no spreading grounds within the basin. Imported water from the Metropolitan Water District is the main source of potable water supply for the residents of the basin. Groundwater discharge from the basin primarily occurs through groundwater production, with lesser amounts lost from ground water discharge to rivers, and subsurface outflow.

5.2.3 Treatment of Potable Water Supply

Groundwater within the Verdugo Basin is used as a drinking water supply by two purveyors: the City of Glendale and the CVWD. The CVWD operates the Glenwood and Mills Well Fields, while the City of Glendale operates the Glorietta Well Field. During water year (WY) 2000-01, a total of 5,659 acre-feet (ac-ft) of groundwater was extracted from well fields in the Verdugo Basin. The CVWD extracted 3,420 ac-ft of groundwater from its two well fields, and the City of Glendale 2,227 ac-ft of water from its well field (Watermaster, May 2002). During this reporting period, 12 ac-ft were extracted for private party use. Annual municipal extractions for the period from 1969 to 2001 averaged 5,231 ac-ft (Watermaster, 2002).

To maintain adequate supplies of high-quality water, both the CVWD and the City of Glendale maintain facilities to treat or otherwise address the nitrate contamination. Both the CVWD and the City of Glendale blend groundwater containing nitrate with imported water to reduce the nitrate level prior to distribution to customers (telephone conversation with Nick Cruz, City of Glendale, 1991). DHS, Office of Drinking Water, allows blending up to a maximum of 10 times the MCL. The City of Glendale blends Verdugo

Study Area groundwater at its Glorietta Reservoir Complex. Blending ensures that the nitrate content of the water stays below the 30 ppm "alert status." Distribution system testing indicates the range of nitrate is in the 22 to 28 ppm range (telephone conversation with Wil Wilson, City of Glendale, 1998). This plant continues to operate satisfactorily. CVWD is currently operating the Glenwood Nitrate Reduction Plant, using an ion-exchange process for nitrate removal.

As a part of the monitoring process, operators take six (6) daily samples at internal process points. Weekly samples from the distribution system as well as monthly samples from all District groundwater wells are also analyzed. These levels are supplied in monthly reports to DHS to verify that levels of nitrate are in the 22-28 ppm range, well below the 45 ppm State standard for drinking water.

Treatment of groundwater for VOC contamination has not been a concern due to the low concentrations present. Current available data indicate PCE concentrations of less than 1.4 ppb in the Glorietta Well Field, and less than 2.3 ppb in the Glenwood/Mills Well Field.

5.3 Investigations of Water Quality in the Verdugo Study Area

In 1981, the LADWP began a 2-year study designed to assess groundwater contamination in the SFVB. Included in the study were wells located in the Glorietta, Glenwood and Mills Well Fields in the Verdugo Study Area. More than 600 water supply wells were sampled as part of this basinwide program.

Between 1982 and 1983, wells within the SFVB were sampled for VOCs, SVOCs, and pesticides/herbicides. Results of this sampling revealed concentrations of the VOC tetrachloroethene (PCE) in the Verdugo Study Area in excess of the Safe Drinking Water Act MCL of 5 ppb at several water supply production wells in this basin (see Section 5.4.2).

U.S. EPA subsequently entered into a cooperative agreement with LADWP to conduct an RI of the SFVB. The RI included a baseline risk assessment for the eastern portion of the SFVB. Since the completion of the RI in 1992 through 2002, U.S. EPA has continued to monitor groundwater quality by sampling groundwater wells in the Verdugo Study Area four times a year as part the SFVB basinwide monitoring program. Data from these sampling events, as well as groundwater data from local water-supply wells, are used to map the presence and extent of groundwater contaminants. These data are available for review as part of the Administrative Record.

5.4 Groundwater Contaminants in the Verdugo Study Area

5.4.1 Nitrate (NO_3)

Nitrate *(NO_3)* contamination of groundwater in excess of the State MCL of 45 parts per million (ppm) has been detected throughout approximately 50 to 60 percent of the Verdugo Study Area. To date, the maximum concentration of nitrate detected in the Verdugo Study Area is 101 ppm during February 1995. In U.S. EPA's RI monitoring wells, the maximum observed concentration was 86.8 ppm in 1993. The most recently available data (2002) indicate nitrate concentrations less than 46 ppm in the Glorietta Well Field, and less than 51 ppm in the Glenwood/Mills Well Field. Potential sources of nitrate contamination include fertilizer applied during agricultural practices, animal waste from confined animal facilities, and septic tank effluent.

5.4.2 Tetrachloroethene (PCE)

Tetrachloroethene (PCE) is the most prevalent synthetic, industrially-derived organic contaminant within the Verdugo Study Area and has been detected within an elongated, north-northwest trending area centered along the west-central portion of the basin. The maximum concentration of PCE reported in the Verdugo Study Area is 52 parts per billion (ppb) during June 1982. The area of greatest PCE groundwater contamination was located in and near the Glenwood/Mills Well Field, where historic concentrations averaged between 5 ppb and 20 ppb throughout most of the 1980's. The most recently available data (2002) indicate PCE concentrations of less than 1.4 ppb in the Glorietta Well Field, and less than 2.3 ppb in the Glenwood/Mills Well Field. Current PCE contaminant levels in the Verdugo Study Area are below the Federal and State MCL of 5 ppb.

5.4.3 Trichloroethene (TCE)

Available data indicate that trichloroethene (TCE), another synthetic, industrially-derived organic contaminant, has not been detected in concentrations above the Federal and State MCL of 5 ppb in the Verdugo Study Area. Concentration plume maps have not been constructed for TCE due to the relatively minor contribution of this contaminant in the Verdugo Study Area.

5.4.4 Inorganic Compounds (chromium, nickel, thallium, antimony)

Inorganic analyses of groundwater from monitoring wells from 1992 through 2002 have occasionally displayed metal concentrations which exceeded Federal and State standards.

Although initial sampling of RI monitoring wells indicated some metals concentrations exceeding their respective MCLs, subsequent re-sampling using appropriate filtering methods provided more accurate samples. Metal concentrations in these samples were below their MCLs. The U.S. EPA reviewed all of the metals sample data in the SFVB database. There were some cases where the reported concentrations and the reported detection limit were initially listed at above the MCL for a particular analyte; however, when the quality control methods of the laboratory were reviewed, it was determined that the samples were actually non-detect.

6.0 Current and Potential Future Site and Resource Uses

Land use in the Verdugo Study Area is primarily residential along the floor of the valley, and undeveloped open space in surrounding mountains. A northwest-oriented strip of commercial development is present along Foothill Boulevard, and a commercial sector is present in the southern portion of the basin. The basin contains four scattered agricultural areas, and no industrial development.

The CVWD produces approximately 65% of its customers' annual water demand from the operation of groundwater wells, all located in the lower, southerly portion of the Crescenta Valley. The remainder of the District's water supply is treated surface water purchased from the Foothill Municipal Water District (FMWD). The District and the City of Glendale are the only two water-rights holders in the Verdugo Basin by the order of a court adjudication of the entire San Fernando Basin decreed in 1979. Overall groundwater supply management of both basins is performed by a court-appointed Watermaster and his staff working in the office of the Los Angeles Department of Water & Power.

7.0 Site Risk

The baseline risk assessment conducted in conjunction with the San Fernando Valley RI in 1991 addressed compounds in the groundwater of the entire eastern portion of the SFVB, which includes the Verdugo Study Area. The U.S. EPA has continued to monitor groundwater since the completion of the RI through 2002 along with monthly monitoring of drinking water wells by the 2 water purveyors for the Verdugo Study Area. Recent data indicates that concentrations of VOCs have declined. Current PCE contaminant levels in the Verdugo Study Area are below the MCL. TCE has never been detected in concentrations above the MCL in the Verdugo Study Area.

Screening-level Human Health and Ecological Risk Assessments were conducted as a portion of U.S. EPA's proposal for no remedial action for the Verdugo Basin. Potential risks to human health associated with exposure to chemicals of potential concern in groundwater

were found to be within EPA's acceptable risk management range. There were no ecological risks found for the compounds present.

As a part of the San Fernando Valley Cooperative Agreement between the U.S. EPA and California RWQCB, potential VOC source sites in the Verdugo Basin were reviewed by the RWQCB. As a result of their inspections of potential sources for the Verdugo Basin, the RWQCB determined that the area was not a large industrial area and that there were no major point sources of PCE.

8.0 Documentation of Significant Changes

The selected remedy is the same as that contained in the Proposed Plan. U.S. EPA has determined that conditions do not warrant remedial action under Superfund. No action under Superfund is necessary in the Verdugo Study Area to ensure adequate protection of human health and the environment.

III. RESPONSIVENESS SUMMARY

No comments were received during the public comment period. The State of California concurs with the selected remedy.